

SciPaaS: a Scientific Execution Platform for the Cloud

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Abstract : SciPaaS is a prototype development of an execution platform/middleware designed to make it easy for scientists to rapidly deploy their scientific applications (apps) to the cloud. It provides all the necessary infrastructure for running typical IXP (Input-eXecute-Plot) style apps, including: a web interface, post-processing and plotting capabilities, job scheduling, real-time monitoring of running jobs, and even a file/case manager. In this paper, first the system architecture is described and then is demonstrated for a two scientific applications: (1) a simple finite-difference solver of the inviscid Burger's equation, and (2) Mendel's Accountant—a forward-time population genetics simulation model. The implications of the prototype are discussed in terms of ease-of-use and deployment options, especially in cloud environments.

Keywords : web-based simulation, cloud computing, Platform-as-a-Service (PaaS), rapid application development (RAD), population genetics

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